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In The United States Patent And Trademark Office

Appl. No.:	09/658,866 Confirmation No.: 2936
Applicant(s):	Gunther et al.
Filed:	September 8, 2000
Art Unit:	3626
Examiner:	Rachel L. Porter
Title:	METHOD AND SYSTEM FOR DEVELOPING OPTIMIZED SCHEDULES

Docket No.: 023895/258395
Customer No.: 00826

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APPEAL BRIEF TRANSMITTAL
(PATENT APPLICATION – 37 C.F.R. § 41.37)

1. Transmitted herewith is the APPEAL BRIEF in this application, with respect to the Notice of Appeal filed on September 6, 2005.

2. ☐ Applicant claims small entity status.

3. Pursuant to 37 C.F.R. § 41.20(b)(2), the fee for filing the Appeal Brief is:
   ☐ small entity $250.00
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☒ Any additional fee or refund may be charged to Deposit Account 16-0605.

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Lisa Rone

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APPEAL BRIEF UNDER 37 CFR § 41.37

This Appeal Brief is filed pursuant to the "Notice of Appeal to the Board of Patent Appeals and Interferences" filed September 6, 2005, and the Notice of Panel Decision from Pre-Appeal Brief Review mailed October 11, 2005.

1. ***Real Party in Interest.***

The real party in interest in this appeal is Sabre Inc., the assignee of the above-referenced patent application.

2. ***Related Appeals and Interferences.***

There are no related appeals and/or interferences involving this application or its subject matter.

3. ***Status of Claims.***

The present appeal involves Claims 1-17, which are presently under a final rejection as set forth by the Official Action mailed June 3, 2005. A pre-appeal request was submitted on September 6, 2005, but the decision of the panel of Examiners found that Claims 1-17 stand

rejected because one or more issues are ripe for appeal. The claims at issue are set forth in the attached Appendix.

4. ***Status of Amendments.***

No amendments have been made subsequent to the Official Action mailed June 3, 2005.

5. ***Summary of Claimed Subject Matter.***

The claimed invention provides a computer implemented method, system, and computer program product for optimizing a schedule of legs employed by at least one service provider in transporting objects between geographic markets. The claimed invention is generally described in terms of a leg generation phase, an initialization phase, and an improvement phase. The leg generation phase is used primarily to create an overbuilt host schedule (OHS), which includes not only host airline (HA) legs that are actually scheduled, but also HA legs that are not scheduled but may be incorporated into the HA schedule if appropriate (p. 8, line 21 – p. 9, line 3). As shown in FIG. 4, various information, including schedules for HA legs and new legs for consideration as entries to the schedule, is input for organization and processing for leg generation. A list of all legs is created to identify which previously specified arrival and departure complexes of the hub stations are served by one or more HA legs, which also includes allocating unique origination and destination pairs to the list of legs, determining whether a leg serves a HA hub, and determining whether a leg serves a particular departure or arrival time complex (p. 10, lines 6-8; p. 11, lines 4-7; see FIG. 5). Additional legs may be automatically generated for all services contained in the input schedule that either start or end at a HA hub station or for covering any unserved complexes (p. 11, lines 7-22; see FIGS. 6A-C). The OHS is provided to a conventional airline profitability model (APM), where itineraries are generated (p. 12, lines 14-16). During the initialization phase, various data (e.g., OHS, logit parameters, marketing data, equipment data, control parameters, etc.) is assembled and input for use in the improvement phase (p. 12, lines 20-21). At the conclusion of the initialization phase, a HA equipment count and block time are obtained for use in the improvement phase (p. 14, lines 7-8).

The improvement phase (i.e., market plan generation) includes generating a number of market plans (see FIG. 7). A market plan is an automatically-generated list of itineraries for serving a city-pair called a market (p. 6, lines 8-9). Each itinerary that can serve a market is known, and it is determined whether the itineraries include a HA leg (p. 15, lines 3-9). If an HA leg is present in a first itinerary, a first market plan is initialized, the status of the itinerary is flipped (i.e., flown v. not flown), and the status of the remaining itineraries for the same market is not changed (p. 15, lines 10-12). Conventional elapsed time pruning is utilized on the active (i.e., flown) itineraries in the first market plan, and all HA legs are identified in the active itineraries (p. 15, lines 15-18). If a previously-stored market plan uses the same set of HA legs, the market plan is not stored, but if not, the market plan is stored, and the remaining itineraries for the first market plan are considered (p. 15, line 18 – p. 16, line 4). The process continues until a number of market plans have been generated for all HA markets, where each market plan represents a different alternative for serving a respective HA market (p. 17, lines 15-17).

An APM is employed to evaluate each market plan, which includes estimating anticipated revenue, spill cost for each leg, fixed and variable cost for each leg, demand for each leg, cost to operate each airport, and cost to operate each flight (p. 17, line 18 – p. 18, line 1). A conventional program solver is used to formulate and solve a mixed integer program (MIP) to select a subset of market plans that is consistent across all markets and maximizes overall HA profit (p. 18, lines 5-8; see Appendix B). The MIP may assign to each market plan a separate valuation representing a percentage of the estimated full demand that could be served by the market plan (p. 18, lines 16-19). Moreover, the MIP may provide fractional valuations for the market plans, which permits having more than one market plan serve a particular market to increase offered services in suitable markets (p. 19, lines 17-19). The MIP takes into consideration that increased services offered in one market may impact the ability to serve other markets when selecting a subset of market plans intended to optimize overall profitability of the schedule (p. 19, line 20, p. 20, line 2).

An APM is again used to evaluate the subset of market plans selected by the MIP, where the subset of market plans provides a proposed, optimum schedule (p. 20, lines 5-7). In this regard, the APM provides cost, revenue, and demand estimates (p. 20, lines 7-8). Additional

iterations may be performed and certain boundary conditions may be changed to generate new market plans (p. 20, lines 9-19). Once the market plans are completed, the FAM and APM complete fleet assignment scheduling of the optimized schedule to produce final APM estimations for the schedule (p. 20, line 19 – p. 21, line 2).

As described above, the method, system, and computer program product of the claimed invention initially identify a set of itineraries currently serving each market and then generate a set of modified itineraries for each of a plurality of markets. By way of example, for a market defined by an origin of Dallas-Fort Worth (DFW) and a destination of Seattle, the original set of itineraries that was identified might include a single direct flight from DFW to Seattle (herein designated "Itinerary 1"). As such, the set of market plans generated for the DFW to Seattle market could then include other direct flights between DFW and Seattle at different times than the currently scheduled flight, as well as connecting flights, such as an itinerary that includes a flight from DFW to San Francisco and subsequently a flight from San Francisco to Seattle (herein designated "Itinerary 2") and another itinerary including a flight from DFW to Denver and a subsequent flight from Denver to Seattle (herein designated "Itinerary 3").

As recited by the claimed invention, the profitability of each market plan is individually determined for each of the markets following the generation of a new set of market plans for each of the markets. Continuing with the prior example, for the DFW to Seattle market, a first market plan may elect to serve the market by offering both Itineraries 1 and 2, a second market plan may elect to serve the market by offering Itineraries 2 and 3, and a third market plan may elect to serve the market by only offering Itinerary 3. As such, the profitability of each of the first, second, and third market plans would then be individually determined. As recited by the claimed invention, this individual determination of the profitability of each market plan is conducted for each market plan in each market following the generation of the set of market plans for each of the plurality of markets. In other words, the plurality of market plans for each of a plurality of markets are generated and then the profitability of each market plan in each market is individually determined.

Thereafter, a subset of market plans is selected from among the set of market plans for each market that optimizes the overall profit of the schedule. By way of the continued example,

this selection process can analyze the various markets plans, i.e., flight options, and the profitability of each market plan within each market and select zero, one, or more than one market plan for each market, wherein the selected market plans for the various markets optimize the overall profit of the schedule. For example, this selection process may determine that the overall profit of the schedule is optimized by supplementing the currently scheduled direct flight between DFW and Seattle (Itinerary 1) with a connecting flight through San Francisco (Itinerary 2), but not by offering other direct flights between DFW and Seattle at other times and not by offering another connecting flight through Denver. Thus, for the DFW to Seattle market, Itineraries 1 and 2 would be selected, and in combination with the itineraries selected for each of the other markets, would comprise the resulting airline schedule.

As further recited by the claimed invention, the selection of the subset of market plans that optimizes the overall profit of the schedule also accounts for the resources of the service providers that provide the various legs. Thus, the selection of the subset of market plans that optimizes the overall profit of the schedule takes into account the finite resources of the service providers and does not select a subset that optimizes the overall profit of the schedule but that requires more resources than possessed by the service provider. In the foregoing example, the subset optimizing the overall profit of the schedule would be selected in such a manner that no aircraft would be required to be in two places at any one time or to be in service in conjunction with two or more flights at one time. By optimizing the overall profit of the schedule subject to the constraints imposed by the resources of the service providers, the resulting schedule does not necessarily, and generally does not, include the market plan from each market that produces the largest profit since that particular subset of market plans is typically infeasible as a result of violating the constraints imposed by the resources of the service providers. However, the subset of market plans is selected in such a manner so as to optimize the overall profit subject to the constraints imposed by the resources of the service providers, such as by selecting those itineraries that are not necessarily the most profitable on an individual basis, but are the most profitable when considered in combination from among those subsets that are flyable.

By individually determining the profitability of each market plan for each market following the generation of the set of market plans for each of plurality of markets, and by

thereafter selecting the subset optimizing the overall profitability of the schedule following the determination of profitability of each market plan for each market, the method, system, and computer program product of the claimed invention can more efficiently analyze a wide variety of alternative schedules and arrive at an optimized schedule in terms of profitability, as opposed to more conventional incremental approaches in which a schedule change is made and the effect of the schedule change on profitability is evaluated, prior to considering any other scheduling changes and their respective effects upon profitability.

6. ***Grounds of Rejection to be Reviewed on Appeal.***

(i) Claims 1-4, 6-7, 11-14, and 16-17 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,652,867 to Barlow et al.; and

(ii) Claims 5, 8-10, and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Barlow '867 patent in view of Official Notice.

7. ***Argument.***

(i) Rejection of Claims 1-4, 6-7, 11-14, and 16-17 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,652,867 to Barlow et al.

The Barlow '867 patent discloses a computerized airline reservation system simulator that can be used by an airline to maximize revenues. See Col. 3, lines 37-39. As shown in Figure 1, a global network is built (step 4) using the HA and other airline information 2, which includes origin and destination information for flight services offered by the airline provider, display rules for each CRS, market share information, estimates of market size and revenues, frequency of requests for each request time, and the HA's share of bookings on a given CRS. The global network 4 is a worldwide database arrangement of travel services provided by travel providers in all markets of interest. See Col. 3, lines 46-59. A CRS display screen is then simulated (step 6) and analyzed to determine the screen presence of the travel provider's flight services on the network of reservation systems, which also takes into account the market size and revenue of the travel provider's services in a given market (step 8). The results are provided to

the user (step 10). The HA information may be modified and the process repeated to provide updated results in step 10. See Col. 3, line 66 to Col. 4, line 19.

As shown in Figure 2 of the Barlow '867 patent, to build the global network, an origin-destination record containing all origin-destination data, including connecting points, for all flight services offered by airline travel providers in all markets of interest is built (step 16). Any unattractive service options may then be eliminated from the origin-destination record whenever a superior service is available (step 18). Given a particular flight service request, select options are executed to identify the potential flight services for sorting and display (step 20). See Col. 4, lines 20-45.

As shown in Figure 3 of the Barlow '867 patent, the screen simulation step determines what type of CRS to emulate and obtains the sort and display rules (step 23) for the CRS. Consumer service requests to show travel agent request activity on a CRS are also simulated (step 31). Simulation screens for individual markets and request times are created (step 34), which represent the display information obtained when service requests 31, 32 and 33 are made for the travel provider's flight services in all markets of interest throughout the global network. See Col. 4, line 46 to Col. 5, line 22.

As shown in Figure 5 of the Barlow '867 patent, the analysis begins by recreating the simulation screens created in step 34 (step 48). The information in the simulated screens is summarized to determine the airline provider's screen presence in all markets (step 50) and per individual market (step 52), which allows the determination of average screen presence throughout all markets (step 54). The screen presence of flight services on a given CRS is also calculated using the reservation system's build, edit, sort and display rules (step 56). The travel provider's revenue potential in a given market, overall market or combination of markets is also determined (step 58). See Col. 5, line 48 to Col. 6, line 3. The revenue potential is derived from market share parameters, such as market size and market revenues so as to quantify the travel provider's revenue potential if no passengers were turned away and no limits in capacity existed. See Col. 6, lines 42-46.

Thus, the Barlow '867 patent provides a CRS simulator that evaluates the screen presence of a carrier's scheduled flights on a connection-by-connection basis. The air carrier can

maximize revenues for a given flight based on the best screen presence for each connecting point of the flight, then schedule a flight service comprising the most desired connecting points as requested by customers and thereby maximize its overall revenues along the entire flight path. See Col. 2, lines 39-47.

In the final Official Action and second Official Action, the Examiner alleges that the Barlow '867 patent anticipates independent Claims 1 and 11, and that independent Claim 8 is obvious in light of the Barlow '867 patent in view of Official Notice. In particular, the Examiner finds that the Barlow '867 patent discloses the identifying step (Figure 1 and col. 3, lines 45-65), the generating step (Figures 2 and 4; col. 4, lines 15-45), and the determining step (Figures 2, 4-5; col. 2, lines 39-47; col. 6, lines 36-46 and 56-67) of independent Claims 1 and 11. Furthermore, in the Response to Arguments set forth in the final Official Action, the Examiner rejects our previous arguments that the Barlow '867 patent does not teach or suggest generating a set of market plans (i.e., a plurality of market plans) for each of a plurality of markets and determining the profitability of each market plan. More specifically, the Examiner believes that this particular limitation is satisfied by the Barlow '867 patent because Barlow discloses obtaining a set of results and summarizing these results (Figure 1; col. 4, lines 15-20) and performing analyses and valuations for several market plans for various individual markets (col. 5, line 40 – col. 6, line 3).

In contrast to the disclosure of the Barlow '867 patent, the computer implemented method and computer program product of independent Claims 1 and 11, respectively, for optimizing a schedule of legs employed by at least one service provider in transporting objects between geographic markets identify a set of itineraries for serving each market in a set of markets, with each itinerary comprising one or more legs. The computer implemented method and computer program product of the claimed invention also generate a set of market plans for each of a plurality of markets. As recited by independent Claims 1 and 11, the set of market plans for each market comprises a plurality of market plans with each market plan including a modified set of the itineraries for the market. The profitability of each market plan is then individually determined for each market following the generation of the set of market plans for each of the plurality of markets. Finally a subset optimizing overall profit of the schedule is

selected from the set of market plans for each market while also taking into account the resources of a service provider. As also recited by independent Claims 1 and 11, this subset selection is conducted following a determination of the profitability of each market plan for each market.

Applicants respectfully disagree with the Examiner's allegations, as to Barlow's anticipation of independent Claims 1 and 11. In particular, Applicants submit that the disclosure of the Barlow '867 patent does not teach or suggest generating a plurality of market plans for each of a plurality of markets and then individually determining the profitability of each market plan for each market, as recited by independent Claims 1 and 11. Instead, the Barlow '867 patent describes the generation of a single modified market plan for each market. While each modified market plan may include multiple modifications relative to the current flight schedule as set forth in column 4, lines 15-20 of the Barlow '867 patent, only a single modified market plan is generated for each market at any one time. Based upon the computerized airline reservation system simulation of the Barlow '867 patent, the screen presence per individual market is calculated and, in turn, the average screen presence throughout all markets is determined. Based upon this average screen presence, the revenue potential attributable to the modified market plan in each market or in a combination of markets can be determined as described in column 5, line 66 – column 6, lines 3 of the Barlow '867 patent. In contrast to the claimed invention, if the technique described by the Barlow '867 patent desires to consider the impact of other modified market plans upon the profitability of the schedule, the entire process would be repeated for each market plan.

The Examiner further finds that the Barlow '867 patent discloses selecting from the set of market plans for each market a subset optimizing the profit of the schedule, while accounting for resources of the service provider (Figures 2 and 4-5; col. 2, lines 39-47; col. 6, lines 36-46 and 56-67). The Examiner also alleges in the Response to Arguments that Claims 1 and 11 fail to provide any guidelines to explain how the claimed invention accounts for the resources of a service provider. In any event, the Examiner finds that, given the breadth of the claims, the Barlow '867 patent takes into account flight service to a given travel provider based upon market size and average market revenue (col. 3, lines 46-59; col. 5, lines 61-65).

However, the Applicants respectfully disagree and submit that the Barlow '867 patent also fails to teach or suggest selecting from the set of market plans for each market the subset optimizing the overall profit of the schedule following the determination of the profitability of each market plan for each market, as recited by independent Claims 1 and 11. Instead, as described above, the Barlow '867 patent would consider the revenue potential of a schedule comprised of a modified market plan for each market, but would be incapable of selecting from among a set of market plans that have been generated for each market and for which the profitability has been individually determined. Instead, to consider the impact of additional modified market plans upon the revenue potential, the overall process would be repeated in accordance with the technique described by the Barlow '867 patent, thereby potentially resulting in a somewhat less efficient process than that recited by the claimed invention.

Furthermore, the Barlow '867 patent does not teach or suggest selecting a subset of market plans from among the set of market plans that has been generated for each market to optimize overall profit schedule "while accounting for resources of a service provider", as recited by independent Claims 1 and 11. In this regard, independent Claims 1 and 11 ensure that the service providers have appropriate resources to perform the subset of market plans that is selected to optimize the overall profit of the schedule, such as by having a sufficient number of aircraft in the appropriate locations to fly the modified schedule. In contrast, the Barlow '867 patent does not teach or suggest any consideration of the resources of a service provider. In addition, Applicants respectfully disagree that market size and average market revenue would be understood to be resources of a specific service provider in light of the description provided by the present application. Rather, the specification of the present application provides several examples of resources for service providers, such as the number of available planes, number of seats, or various equipment variables, which are distinctly different and unrelated to the general market size and average market revenue that may be associated with several service providers (see Appendix B of the present application).

For at least the foregoing reasons, independent Claims 1 and 11 are not taught or suggested by the Barlow '867 patent. Since the claims that depend therefrom include each of the recitations of a respective independent claim, the dependent claims are likewise not taught or

suggested by the Barlow '867 patent. Therefore, Applicants submit that the rejection of Claims 1-7 and 11-17 under 35 USC §102(b) is therefore overcome.

(ii) Rejection of Claims 5, 8-10, and 15 under 35 U.S.C. § 103(a) as being unpatentable over the Barlow '867 patent in view of Official Notice

Independent Claim 8 of the present application includes similar recitations to that of independent Claims 1 and 11. In this regard, independent Claim 8 provides a system including one or more computers executing applications for optimizing a schedule of legs employed by at least one service provider in transporting objects between geographic markets. The system includes a component configured to identify a set of itineraries for serving each market in a set of markets, and a component configured to generate a set of market plans for each of a plurality of markets, wherein the set of market plans for each market comprises a plurality of market plans with each market plan comprising a modified set of the itineraries for the market. The system also includes a profitability model configured to individually determine the profitability of each market plan for each market following generation of a new set of market plans for each of the plurality of markets. Moreover, the system includes a mixed integer program configured to select from the set of market plans for each market a subset optimizing overall profit of the schedule while accounting for resources of a service provider, wherein the subset of market plans is selected following a determination of the profitability of each market plan for each market.

Independent Claim 8 is distinguishable from the Barlow '867 patent for at least those reasons described above with respect to independent Claims 1 and 11. Namely, the Barlow '867 patent does not teach or suggest a component for generating a plurality of market plans for each of a plurality of markets and then individually determining the profitability of each market plan for each market, and/or a mixed integer program for selecting from the set of market plans for each market the subset optimizing the overall profit of the schedule following the determination of the profitability of each market plan for each market. Furthermore, the Barlow '867 patent does not teach or suggest a mixed integer program for selecting a subset of market plans from among the set of market plans that has been generated for each market to optimize overall profit schedule while accounting for resources of a service provider.

Moreover, while Applicants concur that the use of a mixed integer program for an optimization problem is generally known in the art, Applicants submit that the use of a mixed integer program for solving the optimization problem presented by independent Claim 8 is not known to those skilled in the art and provides an additional patentable distinction for the claimed invention. In this regard, Applicants submit that there is no motivation or suggestion for combining the use of a mixed integer program to solve an optimization problem with the method of the Barlow '867 patent as suggested by the Official Action. In particular, the Barlow '867 patent does not describe an optimization problem that needs to be solved by a mixed integer program or otherwise. As described above, for example, the Barlow '867 patent does not describe the imposition of constraints upon the possible solutions as would require the solution of an optimization problem and as are imposed by the resource limitations of the service providers set forth by the claimed invention.

In the Response to Arguments, the Examiner finds that the current language of the claimed invention "fails to detail or recite the resource limitations of the travel service providers and other constraints, which must be considered in order to apply the appropriate optimization strategy and to derive the appropriate solution(s)." However, Applicants submit that a mixed integer program, as known to those of ordinary skill in the art, is employed to not only select a subset of market plans, but also to optimize the overall profit of the schedule. Constraints are necessarily employed in solving an optimization problem. For example, Appendix B of the present application provides a detailed description of the equations, variables, and constraints used for solving the mixed integer program. Thus, the fact that independent Claim 8 fails to positively recite "constraints" lacks merit, as constraints are an inherent component of a mixed integer program. In any event, and as described above, the Barlow '867 patent provides no teaching or suggestion to employ a mixed integer program to select a subset of market plans optimizing overall profit of a schedule.

Therefore, Applicants submit that independent Claim 8 is not taught or suggested by the Barlow '867 patent. Dependent Claims 9 and 10 include each of the limitations of independent Claim 8 and are distinguishable for at least those reasons presented with respect to Claim 8. Accordingly, the rejection of Claims 8-10 under 35 U.S.C. § 103(a) is overcome.

CONCLUSION

For the above reasons, it is submitted that the rejections of Claims 1-17 are erroneous and reversal of the rejections is respectfully requested. A Claims Appendix containing a copy of claims involved in the appeal, an Evidence Appendix, and a Related Proceedings Appendix are attached.

Respectfully submitted,

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Claims Appendix.

1. (Previously Presented) A computer implemented method for optimizing a schedule of legs employed by at least one service provider in transporting objects between geographic markets, the method comprising the steps of:

a) identifying a set of itineraries for serving each market in a set of markets, each itinerary comprising one or more legs;

b) generating a set of market plans for each of a plurality of markets, wherein the set of market plans for each market comprises a plurality of market plans with each market plan comprising a modified set of the itineraries for the market;

c) individually determining the profitability of each market plan for each market following generation of new set of market plans for each of the plurality of markets; and

d) selecting from the set of market plans for each market a subset optimizing overall profit of the schedule while accounting for resources of a service provider, wherein the subset of market plans is selected following a determination of the profitability of each market plan for each market,

wherein at least one of the identifying, generating, determining and selecting steps is performed by a computer processor.

2. (Original) The method of claim l, wherein the generating step includes the substeps of:

a) changing a status parameter of one of the itineraries in the set of itineraries while leaving the status parameters for the remaining itineraries unchanged; and

b) repeating said changing step for each itinerary in the set.

3. (Original) The method of claim 1, wherein market plans are generated utilizing itineraries including at least one leg from a specified service provider.

4. (Original) The method of claim 1, wherein the determining step employs a profitability model.

5. (Original) The method of claim 1, wherein the selecting step employs a mixed integer program to select the subset of market plans to maximize overall profit of the schedule.

6. (Original) The method of claim l, further including the step of evaluating a termination condition to determine whether additional market plans will be generated using the subset of market plans.

7. (Original) The method of claim 1, wherein the identifying step includes the substep of generating the set of itineraries based on at least scheduled legs and automatically-generated hypothetical legs of a specified service provider.

8. (Previously Presented) A system including one or more computers executing applications for optimizing a schedule of legs employed by at least one service provider in transporting objects between geographic markets, the system comprising:

a) a component configured to identify a set of itineraries for serving each market in a set of markets, each itinerary comprising one or more legs;

b) a component configured to generate a set of market plans for each of a plurality of markets, wherein the set of market plans for each market comprises a plurality of market plans with each market plan comprising a modified set of the itineraries for the market;

c) a profitability model configured to individually determine the profitability of each market plan for each market following generation of new set of market plans for each of the plurality of markets; and

d) a mixed integer program configured to select from the set of market plans for each market a subset optimizing overall profit of the schedule while accounting for resources of a service provider, wherein the subset of market plans is selected following a determination of the profitability of each market plan for each market.

9. (Original) The system of claim 8, wherein the component configured to generate a set of market plans is further configured to:

a) change a status parameter of one of the itineraries in the set of itineraries while leaving the status parameters for the remaining itineraries unchanged; and

b) repeat said changing step for each itinerary in the set.

10. (Original) The system of claim 8, wherein market plans are generated utilizing itineraries including at least one leg from a specified service provider.

11. (Previously Presented) A computer program product having computer readable instructions embodied in a computer-readable medium for programming a computer to optimize a schedule of legs employed by at least one service provider in transporting objects between geographic markets, by performing the steps of:

a) identifying a set of itineraries for serving each market in a set of markets, each itinerary comprising one or more legs;

b) generating a set of market plans for each of a plurality of markets, wherein the set of market plans for each market comprises a plurality of market plans with each market plan comprising a modified set of the itineraries for the market;

c) individually determining the profitability of each market plan for each market following generation of new set of market plans for each of the plurality of markets; and

d) selecting from the set of market plans for each market a subset optimizing overall profit of the schedule while accounting for resources of a service provider, wherein the subset of market places is selected following a determination of the profitability of each market plan for each market.

12. (Original) The computer program product of claim 11, wherein the generating step includes the substeps of:

a) changing a status parameter of one of the itineraries in the set of itineraries while leaving the status parameters for the remaining itineraries unchanged; and

b) repeating said changing step for each itinerary in the set.

13. (Original) The computer program product of claim 11, wherein market plans are generated utilizing itineraries including at least one leg from a specified service provider.

14. (Original) The computer program product of claim 11, wherein the determining step employs a profitability model.

15. (Original) The computer program product of claim 11, wherein the selecting step employs a mixed integer program to select the subset of market plans to maximize overall profit of the schedule.

16. (Original) The computer program product of claim 11, further including the step of evaluating a termination condition to determine whether additional market plans will be generated using the subset of market plans.

17. (Original) The computer program product of claim 11, wherein the identifying step includes the substep of generating the set of itineraries based on at least scheduled legs and automatically-generated hypothetical legs of a specified service provider.

Evidence Appendix.

No additional evidence is provided.

Related Proceedings Appendix.

There are no related proceedings.